ABSTRACT

The non-toxic proteolytic C fragment of tetanus toxin (TTC peptide) has the same ability to bind nerve cells and be retrogradely transported through a synapse as the native toxin. A hybrid protein encoded by the *IacZ*-TTC gene fusion retains the biological functions of both proteins *in vivo*, i.e. retrograde transynaptic transport of the TTC fragment and β-gal enzymatic activity. After intramuscular injection, enzymatic activity could be detected in motoneurons and connected neurons of the brainstem areas. This strategy is useful for the delivery of a biological activity to neurons from the periphery to the central nervous system. Such a hybrid protein can also be used to map synaptic connections between neural cells.

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